

REMARKS

By the foregoing amendments, claim 1 has been amended. The amendment to claim 1 does not add new matter. Support for the amendment to claim 1 can be found throughout the specification, and specifically, for example, in paragraph [0054] of the published specification. In this regard, Applicants submit that the recitations of “50 to 90% by weight, preferably from 60 to 88% by weight, particularly preferably from 62 to 86%” show Applicants’ possession of a range of 62 to 90% by weight.

Claim Rejections – 35 U.S.C. § 112, Second Paragraph

Applicants thank the Examiner for withdrawing the rejection under 35 U.S.C. § 112, second paragraph, as indicated in the Advisory Action.

Claim Rejections – 35 U.S.C. § 103(a)

The Advisory Action maintains the rejection of claims 1-5, 7-11, 12, and 13 under 35 U.S.C. § 103(a) as allegedly obvious over Doki et al. (U.S. Patent Application Publication No. 2002/0115790) in view of Shibata et al. (U.S. Patent No. 5,191,024). Applicants respectfully disagree with the basis for the rejection.

Applicants respectfully maintain the points raised in the response filed under 37 C.F.R. § 1.116, and submit that those points are sufficient to overcome the outstanding rejections. Applicants further note that claim 1 has been amended to recite that “the content of aromatic vinyl compound units ranges from 62 to 90% by weight” (rather than 50 to 90% by weight), and respectfully submit that this range imparts further patentability for at least the reasons that follow.

The Office’s position is that although Doki clearly does not teach or suggest the use of any randomly copolymerized block, a person skilled in the art would have combined Doki with Shibata’s randomly copolymerized block. Applicants respectfully note that the claims recite that component (B) of the claimed invention not only has the randomly copolymerized block, but also requires (as noted above) that the content of aromatic vinyl compound units ranges from 62 to 90% by weight. Shibata discloses that the component (B) has the randomly copolymerized

block, but the content of the aromatic vinyl compound is 5-60% (see, for example, claim 1 of Shibata, which recites that the weight proportion of the alkenyl aromatic compound/the conjugated diene is 5/95 to 60/40). This range of the alkenyl aromatic compound units is outside the scope of the present invention and does not suggest Applicants' claimed range. Still further, Shibata discloses at column 2, lines 58-59, that the content of the alkenyl aromatic compound is preferably 7-40%, which if anything, teaches away from the present invention. Applicants further note that Shibata states (at column 2, line 67 to column 3, line 5) that when the proportion of the alkenyl aromatic compound is more than 60% by weight, the resulting hydrogenated diene block copolymer is resinous and, when blended with other resin, gives a resin composition with insufficient improvement in impact resistance, particularly low-temperature impact resistance. This is still further reason a person skilled in the art would not modify Shibata to arrive at Applicants' claimed invention.

On the other hand, Applicants' claims recite that the content of aromatic vinyl compound units ranges from 62 to 90% by weight, and Applicants note that that content provides unexpectedly good results. For example, these unexpectedly good results are observed by comparing Examples 1 and 2 of the present specification with additional comparative Examples 1 and 2, respectively (which are included in the attached Declaration submitted herewith under 37 C.F.R. § 1.132). In the additional comparative Examples using aromatic vinyl compound units of 57% by weight (which is within Shibata), the resulting composition was poorer in mechanical properties, oil resistance, and sliding properties than the Examples of the present invention.

In view of the foregoing, Applicants submit that a *prima facie* case of obviousness is not made out by Doki in view of Shibata.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants submit that all of the claims are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue. Favorable consideration with early allowance of all of the pending claims is most earnestly requested.

Should the Examiner have any questions, the Examiner is invited to contact the undersigned at the below-listed telephone number.

Respectfully submitted,
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September 18, 2009
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of :
Mitsuhiko HORIO ET AL. : GROUP ART UNIT: 1796
Serial No. 10/574,837 :
Filed: April 6, 2006 : EXAMINER:
Vasu Jagannathan
For: Polyoxymethylene Resin :
Composition And Moldings :
Thereof :
D E C L A R A T I O N

Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

I, Nozomi INAGAKI, a Japanese citizen, c/o
Asahi Kasei Kabushiki Kaisha, 1-105, Kanda Jinbo-cho,
Chiyoda-ku, Tokyo, Japan, declare:

That I graduated from Kyoto University, Faculty
of Engineering, Department of Industrial Chemistry in
2003;

That I finished Kyoto University, Graduate
School of Engineering, Department of Polymer Chemistry in
2005,

That I entered Asahi Kasei Chemicals Co., Ltd.

in 2005,

That I engaged in research and development of polyacetal resin at Laboratory of Plastics Dept. of Aashi Kasei Chemicals Co., Ltd. from June 2005;

That I am familiar with the invention of the above-identified application and the prosecution history of the application;

That I have read and understand the advisory action issued against the above-identified application on August 10, 2009 and the prior art references cited therein;

That in order to prove that the specific range (62-90%) of the aromatic vinyl compound units results in unexpectedly advantageous effects, I conducted two additional experiments (additional comparative Examples 1 and 2).

EXPERIMENT

Preparation of component (b-4):

(b-4): A styrene-butadiene random copolymer having the B1-B2-B1 structure was produced in cyclohexane solvent by the use of n-butyllithium as polymerization initiator in a stirrer-equipped reactor the inner atmosphere of which had been replaced with nitrogen gas. Therefore, the polymeric liquid was transferred to another reactor the

inner atmosphere of which had been replaced with nitrogen gas, and the ethylenic unsaturated groups of the polybutadiene portion were hydrogenated under hydrogen pressure by the use of a hydrogenation catalyst. The hydrogenated polymer thus obtained had an amount of styrene bonded of 57% by weight, a content of all block styrene units in the polymer of 30% by weight, an amount of 1,2-vinyl linkage in the butadiene portion of 14% by weight, a weight average molecular weight of 190,000 as measured by GPC and M_w/M_n value of 1.9. The $\tan \delta$ peak temperature of this polymer was -12 °C.

Preparation of the polymer compositions including component (b-4):

The process of Example 1 in the specification was repeated except for changing the composition as shown in the Table A.

Evaluation of properties of the compositions:

Evaluation methods were carried out according to the specification.

Table A

			Add. Comp. Example 1	Add. Comp. Example 2
Composition	(A) Polyoxymethylene resin	(a-1) (parts by weight)	45	45
		(a-2) (parts by weight)	-	-
	(B) Polymer having at least one aromatic vinyl compound-conjugated diene random copolymer block	(b-1) (parts by weight)	-	-
		(b-2) (parts by weight)		
		(b-3) (parts by weight)	-	-
		(b-4) (parts by weight)	55	40
	(C) Olefin resin	(c-1) (parts by weight)	-	15
	(D) Silicone-grafted polyolefin resin	(d-1) (parts by weight)	-	-
	(E) Lubricant	(e-1) (parts by weight)	-	-
	(F) Inorganic filler	(f-1) (parts by weight)	-	-
Results	Physical properties and the like	Tensile strength (MPa)	17	16
		Tensile elongation (%)	>200	>200
		Flexural strength (MPa)	16	16
		Flexural modulus (MPa)	410	390
		Izod impact strength (J/m)	150	200
		Peeling of molded article	○	○
		Loss factor (%) 23°C	11	10
		60°C	9	9
		Sound-damping capability (dB)	56	54
		Oil resistance	△	×
Sliding properties on POM	Reciprocating frictional wear test	Coefficient of friction (μ) 60°C, 5,000 times	0.56	0.50
		Depth of wear (μm) 60°C, 5,000 times	330	250
	Shaft hole fusion test	Load at fusion (kg)	0.1	0.2

The undersigned declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed 17th of September, 2009.

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